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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

November 23, 1940

Kick Off

See Page 324

A SCIENCE SERVICE PUBLICATION

Do You Know?

Glass blocks gain insulating effectiveness by having a hollow center from which most of the air is removed.

Yellowstone National Park's famous *Old Faithful* geyser spouts 10,000 to 12,000 gallons of hot water at its hourly eruption.

The University of Michigan's fine collection of early printed books includes a *medical treatise* printed in 1466 by Ulrich Zell, once apprentice to Gutenberg.

Coaches, says a museum curator, are believed to have originated in Hungary in the fifteenth century and may have got their name from a town called Kocs or Kotzee.

Government agriculturists have had to warn against using too much of the new *hormone sprays* that prevent apples from dropping off trees—too strong a spray makes the fruit stick so tight it is hard to pick.

To paint an ice skating *rink* for a carnival, a St. Louis contractor sprayed special blue paint on the ice with a spray gun and then added a varnished look by spraying water over the paint to make a thin ice coating.

About 300 years before the famous *Trojan horse* episode, an Egyptian general vanquished a Near Eastern prince by drugging him at a peace conference, and then sending 200 soldiers carried in sacks into the prince's city in the guise of booty from a "defeated" Egypt.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

ARCHAEOLOGY

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PSYCHIATRY

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PSYCHOLOGY

What sort of diet would a rat select if given free choice? p. 330.

PUBLIC HEALTH

What are the chief threats against health in England? p. 327.

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Who is America's "medical ambassador"? p. 328.

SEISMOLOGY

Why did the Rumanian earthquake surprise seismologists? p. 324.

Florida's *tree snails* are immigrants in fairly recent geologic times, coming from Cuba.

Canada expects to ship more than 2,000,000 *Christmas* trees to the United States by rail—war or no war.

The United States this year has received 35% of its high-grade *manganese* imports, essential in steel production, from Soviet Russia and 30% from British Africa.

Research scientists foresee that research could remove the menace of *carbon monoxide* generated by automobiles.

To make *tropical fish* comfortable, oil furnaces provide 70 degrees warmth to a Florida aquarium during cooler weather.

Tests indicate that by using pasteurized milk, American cheese manufacturers can produce a milder *Limburger cheese* of uniformly good quality throughout the year.

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MEDICINE

Bone Marrow Transfusions New Attack on Leukemia

Fatal Ill in Which Blood Has Too Many White Cells And Other Rare Blood Disorders May Now Yield

A NEW kind of transfusion, using bone marrow instead of blood, is reported by Dr. Maurice Morrison and Dr. A. A. Samwick, of the Jewish Hospital of Brooklyn, N. Y. (*Journal, American Medical Association,* Nov. 16.)

Leukemia, fatal disease in which there are too many white cells in the blood, and other rare and unconquered blood disorders may yield to this new type of transfusion, the Brooklyn doctors believe.

Bone marrow transfusions have already been used by them, apparently successfully, in treating a 42-year-old salesman suffering from aplastic anemia. In this rare condition, unlike more familiar anemias, the blood contains too few white cells. The bone marrow stops producing white cells in sufficient numbers to make up for those destroyed.

Healthy bone marrow, the Brooklyn doctors reasoned, might stimulate the maturing of blood-forming constituents already present in the diseased bone marrow. So they drew a little less than a teaspoonful of bone marrow from the breastbone of the patient's brother and injected it into the patient's breast bone. Slightly larger doses were given in two subsequent transfusions. The patient recovered from symptoms of his illness and his blood condition also improved. The doctors say it is not justifiable to credit the results solely to the bone marrow transfusions until they have had time for further studies.

Two other patients with rare blood disorders are now being treated with bone marrow transfusions.

Transfusions of healthy bone marrow, they believe, will help many patients suffering from various blood disorders, in the way that liver or liver extract helps patients with pernicious anemia. The latter patients lack a factor essential to the formation of red blood. This factor is supplied by liver. Leukemia patients and others with blood disorders may lack some other blood-forming factor which might be supplied by healthy bone marrow.

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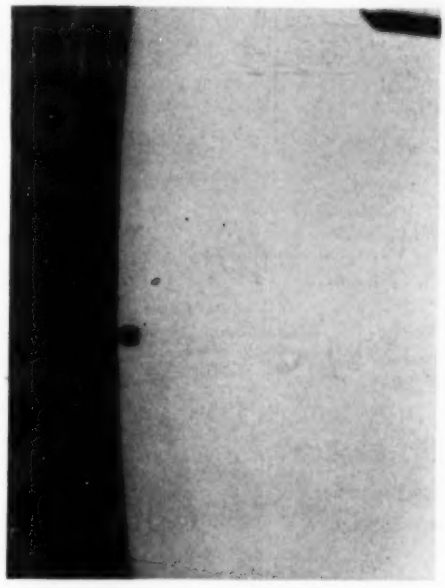

SIC TRANSIT MERCURY

Though cloudy and rainy weather on Armistice Day interfered with ground observations of the transit of Mercury over a large part of the country, a successful motion picture record of the rare phenomenon, last until 1953, was made by Edison R. Hoge at Mt. Wilson Observatory. This picture, reproduced from a frame of the film, shows the tiny planet just after it had entered the solar disk. Pointer seen in the upper right is a timing device. Accurate determination of the time of the transit, by measuring this film, will lead to a more precise figure for the earth's rotation, as well as for the movement of Mercury itself.

PHYSIOLOGY

Vitamin B_1 Protects Against Depressing Effects of Tropics

ARMY medical officials worrying over problems of keeping American troops healthy if hemisphere defense requires them to fight in Central or South American tropics may find a useful tip in a discovery announced by Dr. C. A. Mills and Dr. J. W. Colvin, of the University of Cincinnati, at the meeting of the American Society of Tropical Medicine in Louisville.

The depressing effects of tropical heat can be overcome by doubling the daily intake of vitamin B_1, or thiamin, the Cincinnati doctors discovered in studies with rats. The laboratory findings will be tested on natives of Panama early next year, it is planned.

"Thiamin protection against the evil effects of excessive heat has further important bearings for temperate zone inhabitants during severe heat waves of summer," the Cincinnati doctors state, "and for industrial workers who are exposed to the severe heat of boiler and furnace rooms or other conditions that render body heat loss very difficult. A thiamin intake double that ordinarily considered ample seems likely to offer a large measure of protection against such heat effects and also to offer a most effective therapeutic adjunct in the treatment of heat exhaustion states.

"Energetic people going from stimulating climates into tropical warmth would probably suffer less of a physical slump if they fortified their ordinary dietary thiamin intake with 2-5 milligrams of additional thiamin each day. A large part of dietary thiamin is found in the protein foods that are unconsciously avoided in warm climates because of their specific dynamic action in increasing body heat production."

The reason why thiamin could be expected to put pep into people living in tropical climates or soldiers fighting there is because of its role in the burning of sugar and starch in the body. Without this vitamin the oxidation or burning of glucose stops midway, Dr. Mills explained.

Combustion in the body, however, is necessarily lowered when tropical warmth makes it more difficult to keep cool by dissipating heat from the body. With this lowering of tissue combustion, Dr. Mills has found, goes a fall in "all measurable indices of individual vitality —slower growth, retarded development, lessened fertility, lowered resistance to infection and ability to produce protective antibodies against pathogenic in-

vaders, and in all ways a lowered existence level.

"At the University of Kansas," he continued, "there is now in progress a study showing a lower order of cerebration in animals kept under conditions of moderate difficulty of heat loss,—greater difficulty in mastering the intricacy of a maze and in performing other feats of animal learning."

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SEISMOLOGY

Rumania Not Known As Seismically Active Region

Ruinous Earthquake Came as Surprise to Seismologists; Aftershocks May Be Expected To Do Further Damage

RUMANIA'S ruinous earthquake, first shocks of which occurred on Sunday, Nov. 10, came as a complete surprise to scientific watchers of the uneasy earth in the United States. Although the Balkans have long been known as a seismically active region, most of the earthquakes there have been reported from other countries — Bulgaria, Yugoslavia and Greece, Capt. N. H. Heck of the U. S. Coast and Geodetic Survey informed Science Service. Turkey has been an especially badly afflicted sufferer from earth shocks, last year's Anatolian quakes being among the most violent and deadly in recorded history.

Rumania's last great earthquake, that shook Bucharest on Oct. 22, 1802, was by no means an exclusively Rumanian affair, Capt. Heck explained. In a listing of great quakes drawn up about thirty years ago, and covering all recorded shocks from the beginning of the Christian era until the end of the nineteenth century, this disturbance is reported as having been strongly felt all the way from Hungary to the Dardanelles.

Since Rumania has been swept into the Nazi sphere of power, it is inevitable that this natural disaster will be looked at from the viewpoint of possible military significance. A full-dress earthquake can do more damage, both in extent and severity, than hundreds of bombing raids. It is reasonable to assume, therefore, that rail communications through the stricken area, vital artery of oil and other supplies from Russia through Constanza on the Black Sea, may have been seriously crippled—something decidedly not to Germany's liking at this particular moment.

Furthermore, the relief of thousands of injured and of homeless persons with winter just ready to begin, must inevitably make it extremely hard for Rumania to deliver to Germany all of the supplies contracted for, but now suddenly needed at home.

Half-a-dozen American and Canadian earthquake observatories, reporting by wire through Science Service to the U. S. Coast and Geodetic Survey and the Jesuit Seismological Association, have confirmed the location of the Rumanian earthquake's epicenter at or near Focsani, 100 miles north of Bucharest. Its location is given tentatively as in about 46 degrees north latitude, 26 degrees east longitude. It was a deep quake, with focus about 150 kilometers down.

Since this area of greatest earth motion is in the heart of Rumania's prized oil field, the real effects on Rumania's oil production for the Nazi war machine only begin to be felt with the reported wrecking and firing of refineries and storage tanks. Oil wells after all are mere wormholes in the earth, and the thrust of the quake may have choked a great many of them completely shut.

Furthermore, an earthquake of this violence is almost always followed by numerous aftershocks, sometimes distributed through many months. There is no guarantee that a re-drilled well will not be shut off at any time, without notice.

The blue flashes reported as occurring at the beginning of the quake were not unique to this particular event. They are recorded from other earthquakes in the past, although scientists have never been able to find a satisfactory explanation for them.

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PHYSICS

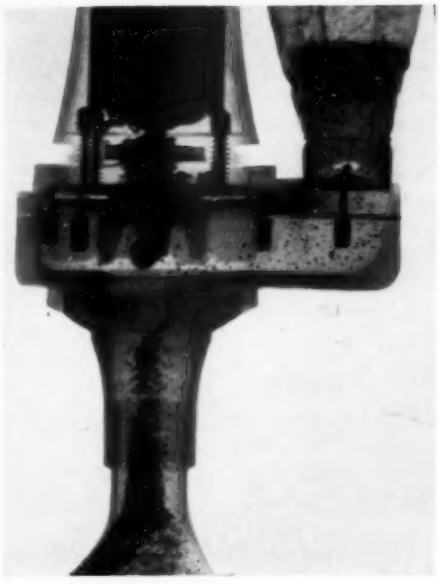
High-Speed X-Ray Photos Show Working of Machines

See Front Cover

BY means of X-ray photographs taken in a millionth of a second engineers of the Westinghouse Lamp Works have been able to show what is happening inside rapidly moving machinery. One of the first applications was to study the

TAKING X-RAYS

Dr. C. M. Slack, of the Westinghouse Lamp Research Laboratories, with the apparatus for high-speed X-rays of a vacuum cleaner. One tube is above, the other to the left. With them two pictures are made at right angles to each other.



WHAT IS INSIDE?

This high-speed X-ray photograph made by Dr. Slack, shows what happens inside a vacuum cleaner. The nozzle is at the lower left.

path of the dust particles in a vacuum cleaner. Since they are shown as if stationary while they are rushing through the blower, it is possible to observe the distribution of the air currents.

Another remarkable photograph appears on the front cover of this week's SCIENCE NEWS LETTER. It shows what seems to be a skeleton's foot kicking a transparent football. However, the football was of the ordinary kind, and the foot was that of a man fully clothed in muscle and skin.

The extremely rapid operation of the special X-ray tube used in these experiments is attained by giving it a momentary "jolt" with very heavy electric currents. The ordinary tube uses about half an ampere of current at a pressure of several hundred thousand volts. With the high speed tube, the voltage is 90,000 or 100,000, but the amperage is about 2,000, though it lasts for only a millionth of a second.

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●RADIO

Dr. Leonard Carmichael, president of Tufts College and director of the National Roster of Scientific and Specialized Personnel, will tell about "Mobilizing the Nation's Expert Brains" as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Nov. 28, 3:45 p.m. EST, 2:45 CST, 1:45 MST, 12:45 PST.

Listen in on your local station. Listen in each Thursday.

PHYSICS—SEISMOLOGY

Super-Speed Seismic Waves Cause Revision of Theories

Push Waves Are Faster Than Shake Waves, and They Travel 1500 Miles an Hour Faster Than Was Thought

SCIENTISTS are going to have to revise their present picture of conditions deep beneath the surface of the earth, Dr. L. Don Leet, director of Harvard's Seismograph Station, indicated.

Here's the reason: Dr. Leet has just completed new measurements of the speed at which earthquake waves travel underground and has found that some of them go about 1500 miles an hour faster than experts had thought. The new figure, the highest ever recorded, cannot be explained in terms of any familiar geological material or present theories about conditions of heat and pressure 21 miles below the earth's surface, he said.

Obviously, these new measurements indicate that the physical laws and conditions applying deep underground are still imperfectly known, he said.

Dr. Leet made his clockings from the records of some 50 earthquakes which have nudged New England and vicinity during the past six years as tabulated on the first good-sized network of seismograph stations to employ a new type of extremely sensitive quake-detector.

Special attention was paid to the waves traveling in the upper layer of the so-called mantle of the earth, about 21 miles underground, and Dr. Leet found that the "push" waves in this layer, that is, those which give a back-and-forth motion, scud along at 5.2 miles a second. The previously accepted velocity was 4.8 miles a second.

Most Sensitive Instruments

The instruments used in the study were Benioff seismographs, the most sensitive yet devised, which were developed by Prof. Hugo Benioff of the California Institute of Technology. Harvard has six of these quake-recorders and others are located at the Dominion Observatory, Ottawa, Williams College, Weston College, Fordham and the Massachusetts Institute of Technology, all of which participated in the study.

The investigation involved the determination of the location and exact time of occurrence of the earthquake and of the arrival of the various wave forms at these observing stations, from which data the speed of the waves could be derived.

The research also enabled Dr. Leet to map for the first time the surface layers of the earth in New England down to the mantle. The top layer, he found, is dominantly granitic and extends down about nine miles. Then comes a second layer of heavier minerals which is six miles thick and probably basaltic. A third layer, also about six miles thick, is of undetermined composition.

Dr. Leet measured the speed of both "push" waves and "shake" waves, which give a side-to-side motion, in each of these layers. The "push" waves, he found, travel 3.8 miles a second in the top layer; 4.2 miles a second in the second layer; 4.45 miles a second in the third layer and 5.2 miles a second still further down at the top of the mantle. The "shake" waves are slower than the "push" waves.

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PHYSICS

U. S. Calls for Physicists Needed in Defense Program

UNEMPLOYMENT among professional physicists, if any exists, should soon be unknown, for the United States Civil Service Commission is endeavoring to secure them to fill positions in connection with the national defense program. Five grades are to be filled, with annual salaries ranging from $2,600 to $5,600.

Applicants must have completed a four-year college course and have had professional experience in physics. No written examination will be required for the three higher grades, but applicants will be rated on their qualifications.

For states east of Colorado, applications, which can be secured at any first or second class post-office, or from the Commission in Washington, D. C., must be sent in by Dec. 12. Residents of western states have until Dec. 16.

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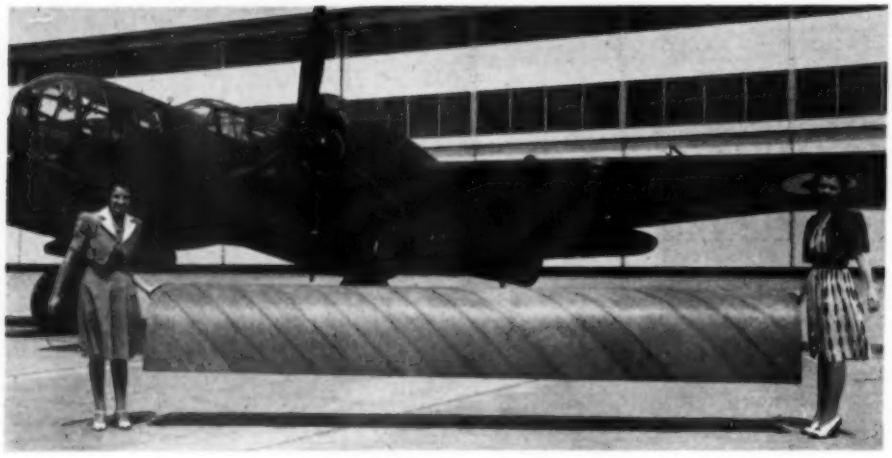

BOMB-BAY DOOR

Plywood of a special kind is used on new bombing planes as a bomb-bay door which is opened just before the bombs are released. Though the doors are 14 feet long, each one weighs but 41 pounds and is able to bear more than 3,000 pounds of weight.

CHEMISTRY

Germans Hail New Fabrics Made From Coal, Lime, Water

Chemical Relative of Our Vinyon, German Product Is Claimed To Be Resistant to Chemicals, Fire and Decay

FABRICS made from a synthetic resin, polyvinyl chloride, are being hailed in Germany as a great advance over rayon, Lanital and other materials derived originally from plant and animal sources.

An enthusiastic description of the new fiber, written by Dr. Herbert Rein, is printed in the July 28 number of the journal, *Die Umschau,* just received in the United States after weeks of delay in transit.

A chemically related product of American origin is already on the market in this country, under the trade name of Vinyon.

The polyvinyl chloride fiber is given the convenience-name "PeCe" (pronounced "pay-say"). It is derived from coal, lime, water and chlorine. The coal and lime are combined in the electric arc to form calcium carbide. This in turn is united with water to make acetylene. The acetylene, with the addition of chlorine, becomes vinyl chloride. Vinyl chloride molecules are linked together (polymerized) to form polyvinyl chloride.

Up to this point the process is not unlike that followed in American chemical plants to make the transparent plastics used in such things as the "sandwich" layer in safety glass, stretchable belts and suspenders, and similar products. It is also somewhat akin to the making of the synthetic rubber, Neoprene.

However, the German manufacturers here dissolve the plastic into a gummy mass and then spin it out into fine fibers, very much as rayon, nylon and other synthetic fibers are produced in this country. These are then spun into thread, to be woven into cloth, knit into hosiery, twisted into cordage or otherwise processed.

Many advantages are claimed for the new fiber. It is highly resistant to both strong acids and strong alkalis, so that it can be used for safety-garments in chemical factories, as lines and handles where cotton or hemp are quickly corroded and destroyed, and as filters where ordinary cloth or paper do not stand up at all. It is fire-resistant to a certain extent: while it can be ignited, it is easily extinguished, and does not smolder afterwards. It is also resistant to decay through the action of molds and bacteria.

Nevertheless, it has some drawbacks, which probably would militate against its successful competition with such a fiber as nylon. PeCe is thermoplastic, it is explained; that is, it softens and loses strength and shape when heated. For this reason, it cannot be washed in really hot water, and ironing, even with a quite moderate iron, is regarded as inadvisable. For the same reason, exposure to steam is injurious to PeCe fabrics and filters used for industrial purposes.

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ARCHAEOLOGY

Ice Age Americans Had Their Ups and Downs

EVEN Ice Age America, back in the days of a mammoth and bison hunter population, had its economic ups and downs. This is the latest revelation of this country's past, unearthed in Colorado by Dr. Frank H. H. Roberts, Jr., Smithsonian Institution archaeologist.

Finding a stratified corner at the now-famous Lindenmeier site, a camp and workshop occupied by Folsom Man in the Ice Age, Dr. Roberts has charted about 1,000 years of very early American prehistory.

The story, told in gradually accumulated layers of earth, each containing a typical kind of stone weapon point, reveals Folsom Man as first and oldest at this convenient camping ground. Folsom hunters arrived some time between 10,000 and 25,000 years ago, and more likely it was 25,000, Dr. Roberts infers from the geologic evidence.

Following bison herds through rich pastures south of the retreating ice sheet, Folsom hunters returned to this camp many summers. Their weapons were the beautifully shaped and grooved Folsom dart points, and they had time for careful work, an eye for beauty—judging by simple efforts to decorate belongings—and they even sewed their garments with eyed needles. Folsom Man's—or Woman's—needles are pronounced by Dr. Roberts evidence that early America used true needles when they were a sign of progress also in cave homes of Europe.

Harder times or more uncouth people followed within a few centuries, judging by the next distinct layer of earth above, containing a degenerated sort of Folsom weapon, hastily made. If the new arrivals were not Folsom descendants, they did at any rate have some of the advantages of Folsom culture. Before they came, the camp had lain abandoned and blanketed with debris. The newcomers made brief stays only at the camp, and it looks as though they lacked the com-

parative ease of "better times" in America.

The campsite eventually lay vacant again, until a third wave of hunters arrived, leaving a quite different dart point.

The stratified find establishes the sequence of early Americans using these strange old weapons, and will aid archaeologists to judge the relative age of such weapons found in other parts of western United States.

Dr. Roberts believes that still another type of Folsom weapon, which has been found scattered in eastern states, represents a still later chapter of this little-known era of American prehistory.

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PUBLIC HEALTH

Nation's Medical Defense Most Far-Reaching in History

More Than 30 Committees and Subcommittees Have Been Mobilized To Advise Army and Navy on Health

THE NATION'S medical defense setup, announced by the committee on information of the National Research Council's division of medical sciences, is believed to be the most far-reaching that the United States or any other nation has ever had.

The only possible exception may be Germany; no one knows exactly what medical defense arrangements have been made there.

More than 30 committees and subcommittees of the nation's leading medical authorities have been mobilized to advise the Army and Navy on medical matters. These committees have been organized under the leadership of Dr. Lewis H. Weed, chairman of the division of medical sciences of the National Research Council. This is in line with the purpose for which the Council was created, at the request of President Woodrow Wilson in 1916, to serve as the active agent of the National Academy of Sciences in organizing the scientific resources of the nation for defense.

Chairman of the committee on chemotherapeutic and other agents, which will study and advise on the best chemicals or other substances for treating infections in war wounds, is Dr. Perrin H. Long, of Johns Hopkins Medical School, who was one of the first American physicians to use sulfanilamide.

The committee on transfusions is headed by Dr. Walter B. Cannon, professor of physiology at Harvard Medical School.

Dr. Russell M. Wilder, of the Mayo Clinic, is chairman of the committee on medicine, which has under it numerous subcommittees on special branches of medicine related to war.

The committee on surgery, under which also are numerous subcommittees, is headed by Dr. Evarts A. Graham, of Washington University School of Medicine.

Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, is chairman of the committee on information.

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PUBLIC HEALTH

Influenza, Pneumonia, Measles Chief Threats in England

INFLUENZA, measles and pneumonia will be the major health hazards to the English people under simultaneous siege from war and cold weather this winter, predicts Dr. John E. Gordon, director of the American Red Cross-Harvard Hospital shortly to be erected in southwest England.

Protection of America from the same war-borne health hazard, if war should come to this country, is the objective of the studies Dr. Gordon and associates will make in the 22-building hospital now being pre-fabricated in the United States for shipment abroad next month.

When epidemics strike a nation at war, doctors and health authorities are too busy trying to check the epidemic and care for the sick to have any time for investigating where and how the epidemic started and travelled. Such investigations, however, could give valuable information for prevention of widespread sickness and death in the future, Dr. Gordon explained.

To gather such information on the ground, for the benefit of the U. S. Army, Navy and Public Health Service, Dr. Gordon and some of his associates will study patients in the 100-bed hospital. At the same time, field units, consisting of two physicians and three nurses, will go out with laboratory trucks to investigate epidemics at the point of their outbreak, using the hospital and its "zoo" of laboratory animals as a base.

Each of the 22 buildings of the hospital will be an almost completely self-contained unit. This is partly to minimize damage in case of air attacks and partly to provide more complete isolation of patients suffering from different contagious diseases, such as measles, scarlet fever, influenza and the like. The latest shatter-proof and blackout-features and bomb shelters will be provided for all the units as protection against air raids.

Dr. Gordon is now organizing the staff of the hospital, which will consist of some 75 doctors, medical technologists and Red Cross nurses. They will leave for England about January first.

Dr. Paul B. Beeson, Boston specialist in chemical treatment of infections, will be physician-in-chief of the hospital. Dr. Gerald F. Houser, also of Boston, will be administrative superintendent. Miss Patience L. Clark, of Detroit, will head the staff of 50 Red Cross nurses.

More than three applications have been received for each post available on the hospital staff, Dr. Gordon said. Physicians, nurses, medical technicians, ambulance drivers from all over the nation have sought appointment.

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Before the war, there were 350,000 fanciers of *pigeons* in Belgium.

Copper deposits in western Germany are reported to be more extensive than had been supposed, and large-scale development may be a war industry measure.

British housewives put out for collection such *"doorstep ammunition"* as bones, which provide glycerine for explosives, old metal, paper, and scraps convertible into animal feed.

PHYSICS

First Electron Microscope Fellowship Goes to Anderson

FIRST award of the R. C. A. electron microscope fellowship has just been made to Dr. Thomas F. Anderson of the California Institute of Technology. Dr. Anderson will work at Camden, N. J., with the newly evolved super-magnification instruments, that use streams of electrons instead of beams of light, producing magnifications as great at 100,000 diameters, as contrasted with 2,500 diameters, utmost performance of ordinary-type microscopes even when ultraviolet light is used.

Dr. Anderson, a native of Wisconsin, has studied at the University of Wisconsin and the University of Chicago, and in addition to his work at the California Institute of Technology had one year of graduate work at Munich, Germany, some years before the present war.

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MEDICINE

Draft Examination Follows NRC Recommendations

THE medical tests which men whose numbers were called in the October 16 draft must pass before being accepted for Army training are based on recommendations made to the Army by a committee of medical authorities summoned for the job by the National Research Council, it was made known by a report from the committee on information of the Council's division of medical sciences.

All summer, the committee on medicine, under the chairmanship of Dr. Russell M. Wilder, of the Mayo Clinic, worked over the Army regulation on "Standards of Physical Examination during Mobilization," so that the standards used this fall for America's new draft Army embody the latest medical knowledge of what constitutes fitness for Army service.

Red tape apparently has been eliminated by simplifying and clarifying the directions to examining physicians and by leaving much more to their discretion and medical judgment when it comes to deciding on the seriousness of defects or ailments found in the men being examined.

• Use of small-size X-ray films in examination of lungs for signs of tuberculosis, to be made if possible on all men selected for training, is another procedure the Army has adopted on the recommendation of one of the National Research Council special committees.

Physicians and surgeons who will treat sick or wounded men will have for their guidance new manuals prepared for medical officers of the Army and Navy by other special committees of medical and surgical authorities.

Science News Letter, November 23, 1940

PUBLIC HEALTH

Medical Ambassador Arrives From England

THE MAN who might now be called America's medical ambassador, Dr. John F. Fulton, of Yale University School of Medicine, has arrived from England via clipper with vital information for the physicians and surgeons in charge of America's medical defense preparations.

Dr. Fulton was met by Dr. Lewis H. Weed, chairman of the medical sciences division of the National Research Council which has mobilized the medical authorities of the nation for defense, and Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association*. Dr. Fishbein is chairman, and Dr. Fulton a member, of the committee on information of the National Research Council's medical defense set-up.

English military and civilian medical authorities, it is understood, gave Dr. Fulton full information on what they are doing and have found most effective in treating war wounds and protecting the health of both fighting forces and civilians during the war. The information Dr. Fulton has brought back with him was considered so vital to America's plans for defense that arrangements were made, it is understood, to facilitate his speedy return much as if he had been on a military or naval mission.

Science News Letter, November 23, 1940

INVENTION

Tires Can Be Changed With Flick of Finger

FINGER TIP tire changing, according to the inventor, is possible with a new invention. (*Ralph D. Yankee, Kansas City, Mo.*). The wheel is made in halves, like two pie plates with their bottoms together. To change a tire, it is deflated, a flick of the finger releases the two halves, and it is quickly removed. The new tire is placed on the half that has been removed, it is held against the other half, and another finger-flick clamps the two together, so the tire is ready for use.

Science News Letter, November 23, 1940

IN SCIEN

INVENTION

Pneumatic Fenders Proof Against Being Dented

AUTOMOBILE fenders made of material similar to the tires and inflated are a recent invention. Being soft and resilient, they are not permanently dented when one runs into another car or a wall, yet they will still give protection for dirt thrown from the wheels. (*Clauss Burkart Strauch, Milwaukee, Wisc.*)

Science News Letter, November 23, 1940

ENTOMOLOGY

Pollen and Soybean Flour Winter Food for Bees

ANCIENT China's "honorable little bean," the soybean, is finding new use among Wisconsin's 15,000 commercial beekeepers. By mixing soybean flour with pollen the bee men have produced a bee bread for emergency feeding when supplies of natural bee bread, required for winter sustenance, run short.

The recipe for this synthetic bee food, developed at the Wisconsin Agricultural Experiment Station, calls for one part of pollen to three parts of soybean flour. However, like the famous recipe for rabbit stew, you must first catch your pollen.

To accomplish that the college scientists have perfected a pollen trap for use on the hives. Made of hardware cloth with five wires to the inch, this consists of two screens placed half an inch apart, in such a way that the bees must pass between them to get into the hive. Most of the pollen which has adhered to their legs during their nectar-hunting forays on the flowers will be brushed off by the hardware cloth and collected in a tray below. After being air-dried, it is stored for future use.

On "baking day" the correct proportions of pollen and soybean flour are mixed into a thick paste, with sugar syrup added to obtain a proper consistency. Since this bread sours or molds readily, each batch is made only large enough to last a week. About half a pound of the paste is given each colony, at weekly intervals.

Science News Letter, November 23, 1940

NE FIELDS

PHYSICS

Atom-Smashing Machine Building for Notre Dame

AN ATOM smashing machine with a capacity of 8,000,000 volts is being constructed by the University of Notre Dame on its campus at South Bend, Ind. This capacity is nearly twice as large as any electrostatic generator now in existence, University officials announced.

The new machine will be in charge of George B. Collins and Bernard Waldman, who operate the school's present 1,800,000-volt device, and John T. Ferguson, who designed it.

The new generator will be enclosed in a 20-ton steel tank 40 feet long and 8 feet in diameter capable of holding an air pressure eight times that of the atmosphere. One section is mounted on street car wheels, so that it can be pulled apart to make the machinery accessible. It is controlled from a room separated from it by a five-foot wall, through which it can be watched by means of a peep hole made of sewer pipe enclosed with glass and filled with water.

Science News Letter, November 23, 1940

PHYSIOLOGY

Sex Control By Chemicals 'Not Proven' in Experiments

SEX CONTROL in unborn offspring by means of alkaline and acid solutions has met the Scotch verdict of "not proven" in experiments performed at the University of Wisconsin by Prof. L. J. Cole, R. M. Shackelford and Emanuel Waletzky. Their results agree with those obtained at another state university, disagree with those reported from a third university and from a commercial laboratory in the East. However, the research groups at all four institutions are in agreement on the one practical point, that the method is not to be recommended as dependable for use on farms at present.

The tests were started after sensational claims were made in an Eastern newspaper, to the effect that if impregnation took place in an alkaline medium the resultant offspring would be predominantly male, and that the opposite sex would appear in the offspring if the impregnation were "acidified." Published results claimed birth ratios as high as 4 to 1 in favor of the theory.

Using lactic acid as the "female" control and bicarbonate of soda as the alkalinizing chemical supposed to produce males, the three University of Wisconsin scientists treated young female rats and rabbit does just before mating. Regardless of the chemical douche used, the ratio of males and females among the 1,746 rat and 286 rabbit offspring came very close to the immemorial 50-50 of uncontrolled nature.

And so the scientists shake their heads and say, "Not proven. More experiments are needed."

Science News Letter, November 23, 1940

MEDICINE

Blood Preserved With Sugar Keeps in Banks for 30 Days

BLOOD for transfusions to save lives of the war wounded or of the civilian sick can be preserved with sugar and used satisfactorily after storage in blood banks for at least 30 days, Dr. R. O. Muether and Dr. K. R. Andrews, of the St. Louis University Hospital Group, reported to the Southern Medical Association meeting in Louisville.

The blood preserving solution these doctors use contains both sugar and sodium citrate. The latter chemical alone will preserve blood for a few days, which may be all that is necessary in large hospitals. In smaller institutions, however, the sugar plus citrate preserving solution is distinctly worthwhile, the St. Louis doctors declared.

Neither blood plasma nor blood serum is an entirely satisfactory substitute for whole blood, these doctors maintain. The fact that they can be used to some extent instead of whole blood for transfusions should not, Drs. Muether and Andrews believe, keep scientists from seeking still better ways of preserving whole blood for war and other uses.

New use for blood plasma, which is the fluid part of the blood, was suggested. It can not only serve as a partial substitute for whole blood for transfusions but can serve as a substitute for protein for patients too sick to eat meat or otherwise unable to obtain protein from their diet. This use of plasma has only just been started by the St. Louis doctors but they reported good results in five patients and urged other physicians to investigate the matter further.

Science News Letter, November 23, 1940

ENGINEERING

Light Diesel Engines Seen as Defense Aid

DIESEL ENGINES, which in 1926 weighed as much as 267 pounds per horsepower, are now made as light as ten pounds per horsepower, H. C. Mougey, of the General Motors Corporation, told members of the Division of Refining of the American Petroleum Institute.

"If it should be desirable for special purposes such as national defense to decrease these weights," he said, "it should be possible to develop diesels of large power output with weights as low as three pounds per horsepower."

Lubricating oils for automobile engines are having to meet much more severe demands than a few years ago, on account of the progress that has been made in engines, fuels and roads, he stated.

Declaring that the cost of an automobile and the cost of the petroleum products to operate it are approximately the same, he said that the oil and automotive industries "constitute a kind of Siamese twins, and the well being of each industry very closely is bound up with that of the other."

Tests made in the laboratory with straight mineral oil, using extra large filters, showed that the same oil could be used for many hundreds of hours with no appreciable effect on the oil, pistons, rings or bearing. Such filtering, however, is not practicable in normal use.

Science News Letter, November 23, 1940

GEOLOGY

Glacier on Mount Rainier On Way to Extinction

MOUNT Rainier's family of glaciers will soon number only 27 members instead of the present 28. Stevens Glacier, near Paradise Glacier, has diminished to a thin piece of ice about a quarter of a mile long, separated by about 200 yards from the main ice body of the mountain's cap.

Perishing of Stevens Glacier is laid to two principal factors: less than two-thirds of a normal snowfall last winter, and mean temperatures averaging 18% above average during the past year.

Other glaciers on Mount Rainier have shown quite irregular behavior during the current season, some of them receding more than their normal average, others considerably less.

Science News Letter, November 23, 1940

PSYCHOLOGY

Hungers Show Body Needs

In Rat Cafeteria, Animals Pick Diet Best for Them; Deprivations Build Up Special Longings, Tastes Change

By MARJORIE VAN DE WATER

WAR has made the children of Central Europe love butter—when they can get it—the way American boys and girls delight in ice cream cones.

War hungers—longings for certain kinds of foods and unusual enjoyment in tasting them are predicted to follow this winter's shortages of some foods in war-ridden lands. They occur even in peace times when the diet is not properly balanced.

Psychologists and nutrition experts are studying these special food longings. From what has already been found, it seems that such special appetites depend not only upon quirks of taste, but upon more deep-seated needs of the whole body. It is a matter of chemical balance in the body tissues.

When we are deprived of some essential to our diet such as butter and butter substitutes, we grow extraordinarily fond of butter. The energetic child who burns up the sugar in the body rapidly is eager for candy.

Your knowledge of what is good for you has nothing to do with this longing for the very foods you need most. You never saw a vitamin—you may have no clear idea of what vitamin B does that is different from D or A. But when you are deprived of vitamin B you will develop a special relish for food containing this "morale vitamin."

In the appetites of animals, nature provides an automatic sort of scheme for providing them with just the diet they require.

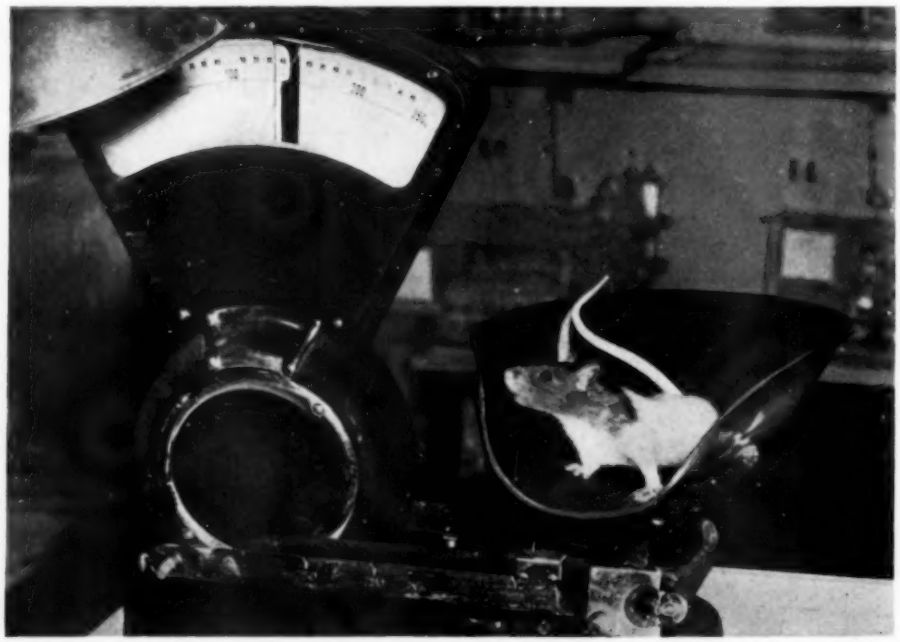
Mothers may raise an eyebrow at this. It may seem to them that nothing is so capricious and unpredictable as the appetites of husbands and children. But experiments with rats have rather clearly demonstrated that when Junior pushes away his oatmeal and demands a third helping of milk or orange juice, he is answering a real need of his body—provided of course that some previous unpleasant experience, some "scene" has not built up in him an artificial aversion to his cereal.

Rats have been used for new laboratory experiments on appetite, partly because rats so closely duplicate the food preferences and dietary needs of man. Experiments of the next year or so may be expected to aid in planning the nutrition of a post-war Europe so that present deficiencies of diet may be made up with the least damage to the health of the people.

There is no such thing as hunger, it is now concluded. Instead there are a score of specific hungers. Absence of one of two necessities such as butter and butter substitutes or wheat from an otherwise adequate diet will produce these "hidden hungers."

The first clear demonstration of the wisdom of the body in selecting diet was made at Johns Hopkins University by Dr. Curt P. Richter. By an ingenious arrangement of food cups, he permitted his rats to have constant access to the various food elements known to be important to the diet. The animals took just as much or as little as they wanted of each type of food.

Faced with luxurious plenty of every type of food, you might think the rats would gorge themselves on the rat equivalent of chocolate layer cake, ice cream and candy, and push aside the spinach and carrots. No such foolishness



PROOF OF THE PUDDING

In this case it is in the healthy growth of the animal. Dr. Richter has checked up on what this rat has eaten by measuring what he took from each of his food cups. Now the scales tell that the rat was wise in his choices.

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RAT CAFETERIA

Dr. Curt P. Richter has found facts that may help solve nutrition problems of the war. From the impressive array of bottles attached to his cage, the rat selects his own diet. He always has plenty of what he needs ready to his tongue. He can take what he wants and leave all the rest. Surprisingly, he picks a diet better for him than that worked out by nutrition experts.

resulted. In fact, the rats actually selected a diet better for them, in terms of growth and health, than the best approved diet worked out by specialists on rat diet.

Even more surprising was the discovery that rats who were sick were able to prescribe for themselves a corrective diet.

Diabetic rats, for example, avoided the sugar that would have hastened their death and were able to keep themselves alive by a self-regulated diet although the sugar was freely accessible to them all the while. Rats with no adrenal glands ate the extra salt they needed to stay alive. Those whose pituitary glands were not functioning properly regulated their water intake so as to preserve life.

It is the rat's tongue that saves his life, Dr. Richter concludes from his experiments. The tongue and its taste buds enable the rat to experience sweetness, sourness, saltiness and many other flavors in its food. This Dr. Richter proved when the animals lost their tasting ability after nerve connections between the taste buds of the tongue and the brain centers had been severed.

With all the nerve connections cut those same rats deprived of adrenal glands who had been keeping themselves alive by taking all the increased amount of salt they needed, were now unable to make this wise selection of diet. They drank indifferently from either salted or unsalted water supplies. Lacking the necessary salt they died.

Watching the rat as he selects his self-controlled diet convinces you that it is taste that enables him to select the right food.

This same problem of how rats can select their food has been studied for a number of years by Dr. Paul Thomas Young, of the University of Illinois. Instead of making all kinds of food available to the animals at the same time, as Dr. Richter has, Dr. Young offers the different foods in pairs. Then when a preference has been demonstrated, each of these foods is presented with some other food until a sort of scale of preferences is built up for each animal at that particular time.

The rat, during this experiment, does not run directly to the preferred food. He must get acquainted with both before he shows which is his choice. He will sniff at both before selecting either. Even after he is familiar with both foods, he will touch one with his tongue before turning to the more preferred choice.

Ordinarily rats, like children, prefer sugar to cereal. But they can be cured of this preference, temporarily, by feeding them on sugar. They become literally "fed up."

Deprivation also reverses the food preferences of rats. In one experiment, Dr. Young found that rats deprived of butterfat would prefer this food to either wheat powder or ordinary white flour. As the testing proceeded, the animals were fed increasing amounts of butterfat bite by bite. As their butter intake increased, their preference for it weakened until first the wheat and then both wheat powder and white flour were preferable to the butter. Finally a few developed a real aversion to the butterfat.

Application of this experiment to the nutrition problems of Europe is brought home by the news report telling of German invaders in Paris who can be seen walking down the streets eating butter alone as though it were candy.

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SCIENCE *in a* CHANGING WORLD

By Gable, Getchell and Kadesch

PRENTICE-HALL, Inc. 70 FIFTH AVE., NEW YORK

But taste is not the whole story, Dr. Young is convinced. He points to an experiment conducted by Dr. M. F. Hausmann. Dr. Hausmann fed rats sugar and, on other days, saccharin. The rats liked both. But there is an interesting difference between saccharin and sugar. Although both taste sweet, only sugar adds calories to the diet. Saccharin passes through the body without nourishing it.

The rats, on days when they were fed sugar, voluntarily decreased the amount of other food they ate to compensate for the increased calories received from the sugar. But on the days when they got saccharin, there was no such reduction in food intake.

In another experiment, Dr. Hausmann gave his rats a cocktail party. The refreshments included food and water as well as the alcoholic drinks. The cocktails for the different rats varied in strength from 2 per cent., which would be equivalent to a pre-repeal beer, to 36 per cent., or as strong as the ordinary drink of whiskey.

The animals, he found, regulated their consumption of the alcoholic beverage, regardless of the strength of the drink, so that they always got the same absolute amount of alcohol.

More than that, they always reduced their food intake to correspond exactly to the amount of calories furnished by the alcohol they had taken.

In addition to the immediate taste of the food or drink on the tongue, the desire for more seems to be regulated by some deep-lying organic need which is dependent upon the chemical condition of the whole body.

Hunger is not a simple single result of an empty stomach, Dr. Young concludes after a careful review not only of his own but all other experiments in this field. He has demonstrated in his experiments at least 10 hungers.

The body may crave protein, fat, carbohydrate, water, oxygen, salt, phosphorus, sodium, calcium and the vitamin B complex. Obviously there are countless other cravings, as yet unexplored.

Satiation as to one or a number of these essentials will leave you still hungering for some of the others.

The chemistry of the taste mechanisms of the mouth is involved in such a chemical change in the body. It is through chemistry that your tongue is sensitized by deprivation to enjoy certain special foods just as thirst sensitizes you to water so that your "dry throat" will urge you to drink.

Dr. Young has also observed that when rats are deprived of some one article of diet, such as vitamin B, they become greatly excited and active when this particular substance is offered to them.

Study of the psychology of hunger, opened up by these attacks on the problem, offers an entirely new field for research which may have the utmost importance in connection with this war and with the post-war reconstruction of the world's health.

By watching the behavior of a rat deprived of butter, or of wheat, or of meat, psychologists may find a clue to what may happen to the minds of men so deprived.

Will they have to work under a tension, an unrecognized restlessness and anxiety, until this natural appetite is satisfied? Will it make them more militant, or will it make them inactive? Can other foods supply the psychological as well as the physiological needs ordinarily filled by the lacking articles of diet?

Rats, which have already in recent years played such an important part in solving problems of nutrition, may be expected to aid in an entirely new way in preserving man's mental as well as physical well-being.

Science News Letter, November 23, 1940

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PALEONTOLOGY

Single Jawbone Discloses Existence of Unknown Birds

A SINGLE fossil jawbone of a long-extinct big bird, found recently in Alberta by Dr. Raymond M. Sternberg of Hayes, Kansas, becomes the basis of an entirely new order of birds, the Caenagnathiformes, in a technical revision of the birds of the world just published by Dr. Alexander Wetmore, assistant secretary of the Smithsonian Institution. It is placed just below the ostriches in the classification table.

The fossil came out of a bed of dinosaur bones and is itself so primitive that it may be reptilian rather than a bird. However, Dr. Wetmore accepts it as such pending further information. The age of the deposit was Late Cretaceous, about 100 million years ago.

Another fossil bird family, the Paranyrocidae, belonging to the general class of ducks, geese and swans, is included because of one curious fossil found in South Dakota deposits about 30 million years old.

Fossil records of birds are far less complete than those of reptiles and mammals, Dr. Wetmore states. Vertebrate fossils are formed, as a rule, through the settling down of a dead body in the mud of a marsh, or through covering with volcanic ash during an eruption. This is far less likely to happen to birds than to the heavier-bodied ground-dwelling animals. Smaller birds especially, falling to the ground when they die, are usually either picked up by carrion-eaters or decay as they lie, even their delicate bones becoming shattered and scattered before they can become embedded under conditions suitable for fossilization.

In Dr. Wetmore's revision, the birds of the world are divided into 34 orders, comprising 202 families.

Science News Letter, November 23, 1940

Twenty common diseases of *animals* are transmissible to man.

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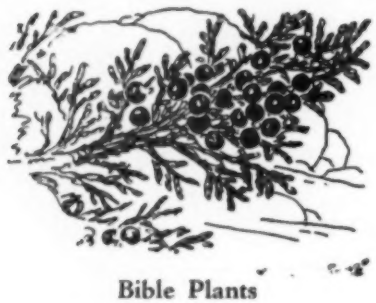
BOTANY

NATURE RAMBLINGS
by Frank Thone



Bible Plants

PLANTS mentioned in the Bible are harder to identify with real certainty than might be imagined from the confident way names are tossed about in the various translations. Many such names were applied by early translators who never saw the Holy Land, innocently imagined its vegetation to be like that of England and Western Europe, and consequently misapplied a considerable number of European plant names, like box, sycamore, holm (holly), and elm, states Dr. Harold N. Moldenke of the New York Botanical Garden, in a recently published study, *Plants of the Bible. (Reviewed, SNL, this issue.)*

People began writing books about the botany of Palestine in 1568, but only in comparatively recent years have botanists actually gone there to make critical studies of plants now growing in the country. Even that, however, does not fully solve the problem, for in the many centuries since the books of the Bible began to be written there have been numerous newcomers among the plants in the Bible land (even including such New World species as prickly-pear cactus and black locust), and there have also been many disappearances, due to the centuries of abuse of the land by stripping away of forests, unwise plowing of hillsides, and over-grazing. The ancient prophecies have been tragically fulfilled: "Upon the land of my people shall come up thorns and briers; yea, upon all the houses of joy in the joyous city. . . . The thorn and the thistle shall come upon their altars."

There can be no doubt about the identity of some of the plants mentioned over and over again in the Bible: palm and olive, vine and fig tree, the mighty cedars of Lebanon and the cypresses that grew in the same place. Doubt has been cleared up on some species that were so uncertain when the Bible was translated into English that their names were then left in Hebrew. It is considered quite probable, for example, that the "gopher" wood of Noah's Ark was juniper, and it is established as practically certain that the Ark of the Covenant, together with the "staves" of its Tabernacle, were made of acacia wood. Yet it has proven impossible to state positively just what the Biblical hyssop was, or to determine which of many thorny bushes was robbed of its twigs when the Roman soldiers plaited the crown of thorns for Christ.

Science News Letter, November 23, 1940

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PSYCHIATRY

Men Up for Army Training Will Have Psychiatric Examination

WHEN men selected for Army training come before the induction boards, they will be examined by a psychiatrist to determine whether they have any mental or emotional disorders which would make them unsuitable for military training and service, Dr. Harry A. Steckel, director of the Syracuse, N. Y., Psychopathic Hospital and chairman of the military mobilization committee of the American Psychiatric Association, reported to the National Committee for Mental Hygiene meeting in New York.

To do this job, one psychiatrist for every 50 men per day to be examined will be a required complement of the medical forces at the induction centers, Army officials and psychiatrists finally agreed.

"This, we feel, represents a real concession and should prove of invaluable service in eliminating undesirable recruits," Dr. Steckel stated in his report, which was read by Dr. Ira S. Wile, of New York City.

Psychiatrists of Army age may not be available in sufficient numbers for active Army duty, an American Psychiatric Association survey revealed, but many psychiatrists were found available for so-called home service who could be utilized on a civilian basis at the induction centers. The Army, it was estimated in 1939 before the survey, would need at least one psychiatrist for every 5,000 troops and the Navy would require a minimum of 150 trained psychiatrists. At the time of the survey, comparatively few well-trained psychiatrists were already in the Army.

Chief objection of Army and Selective Service officials to attempts to screen out psychiatrically undesirable recruits was the amount of time which it was believed would be required for the necessary examinations.

A form for a brief psychiatric exami-

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nation, to consume not more than 15 minutes, was worked out by the American Psychiatric Association, for use by the Army in eliminating psychiatric risks. This, apparently, has not yet been accepted.

Science News Letter, November 23, 1940

Mental Disorders Common

MENTAL and nervous disorders have been prominent among the disabilities that have occurred among the Canadian armed forces, Dr. C. M. Hincks, general director of Canada's National Committee for Mental Hygiene, reported.

Deaths have been few and the general health of the troops has been good, he said, but there have been more than 1,000 cases of mental and nervous disorders, of which 156 were major mental diseases.

Almost one-third, 30%, of the men recently invalided home from Britain have been afflicted with these disabilities, and an additional one-fourth had duodenal ulcer, a condition frequently associated with emotional disturbances and tensions, Dr. Hincks declared.

Insufficient psychiatric and psychologic testing and care is given to Canadian troops, Dr. Hincks' report suggests, with the exception of one division of the Air Force.

Brain-wave studies have proved useful here, he reported, in detecting persons who have never had epileptic seizures but who have convulsions under conditions of low pressure, similar to high altitude flying. Relationships between shallow breathing and emotional instability are being investigated by the Division of Medical Aviation Research.

The war of nerves has made few inroads on the Canadian people as a whole, Dr. Hincks reported.

"We are remarkably free from feelings of anxiety, apprehension or defeatism.

"This has been due in part to the fostering of confidence and will to win on the part of the press, radio, screen and church, and, in part, to the circumstance that everybody is working in the common cause. This constitutes effective occupational therapy in diverting attention from the tragedies and uncertainties of the war itself, and in strengthening morale."

Science News Letter, November 23, 1940

PHYSICS

Radium Substitute May Show Defects in Airplane Parts

Radiation from Yttrium Can Be Used To Photograph Through Two Inches of Iron; Has Long Life

X-RAY photographs of parts of airplanes and other machines important for defense, to reveal any hidden defects and now made with radium, may soon be made with an artificially produced radium substitute, radioactive yttrium, prepared in the laboratory by bombarding strontium with atomic bullets from a cyclotron.

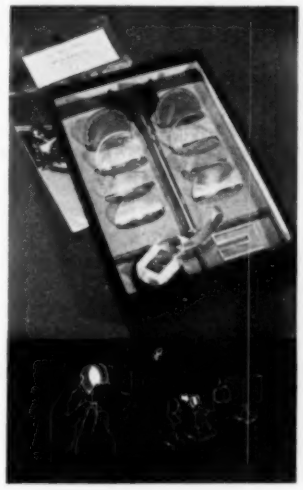
Dr. Charles Pecher, Belgian physicist, now working in the William H. Crocker Radiation Laboratory of the University of California, announces the separation of this material. (*Physical Review*, Nov. 1.)

Dr. Pecher was interested in making the element strontium radioactive for biological investigations. This was done by bombarding strontium samples with 16-million-volt deuterons from the cyclotron. Some of the strontium atoms are converted into a form of another element, yttrium, which also has properties like radium, and which lasts for about 100 days, much longer than most of the artificially radioactive substances. Already, he says, enough has been obtained to be equivalent to about 25 milligrams of radium.

Photographs made through two inches of iron show that the yttrium can be used industrially for photographs of the inside of machinery.

"Because of its long life and penetrating gamma-radiation," writes Dr. Pecher, "this radioactive yttrium is, among the artificial radioactive elements known at the present time, the most likely to be substituted for radium, but it must be considered at the present time merely as a by-product of the radio-strontium preparation as it is, as yet, appreciably more expensive than radium for a like dose of gamma-radiation."

Science News Letter, November 23, 1940



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•First Glances at New Books

ZOOLOGY

THE MAMMALS OF CHINA AND MONGOLIA—Glover M. Allen—*American Museum of Natural History,* 1350 p., illus., $10. (Natural History of Central Asia, Vol. XI, Pt. 2). Second and concluding part of a monumental work based on collections made by the Central Asiatic Expeditions and by explorations of Roy Chapman Andrews. The first part was published two years ago. It is gratifying that this wealth of material was obtained and brought safely to the United States before the havoc of war made eastern Asia inaccessible for scientific field work.

Science News Letter, November 23, 1940

BOTANY

PLANTS OF THE BIBLE—Harold N. Moldenke—*Pub. by author,* 135 mimeographed sheets, 25c. *Available only if ordered direct from Harold N. Moldenke, Associate Curator, New York Botanical Garden, Bronx Park, New York, N. Y.* See page 334.

Science News Letter, November 23, 1940

ARCHAEOLOGY

LANDMARKS OF NEW MEXICO—Edgar L. Hewett and Wayne L. Mauzy—*Univ. of N. Mex. Press,* 200 p., illus., $3.50. Next best to seeing the Indian country of New Mexico is a picture-book tour such as this. The volume of views is accompanied by descriptive text.

Science News Letter, November 23, 1940

HISTORY—SOCIOLOGY

DAILY LIFE IN ANCIENT ROME, The People and the City at the Height of the Empire—Jérôme Carcopino; Henry T. Rowell, ed; E. O. Lorimer, trans.—*Yale Univ. Press,* 342 p. illus., $4. Rome as it appeared to the generation born about the middle of first century A. D. and living on into Hadrian's reign in the next century is the "Rome" of this intensive sociological study. The archaeologist author emphasizes the fact that this Rome of power and prosperity was a far different environment from the rude simplicity of the republic.

Science News Letter, November 23, 1940

HISTORY

CORONADO'S QUEST, The Discovery of the Southwestern States—A. Grove Day—*Univ. of Calif. Press,* 418 p., illus., map, $2.50. Timely history reading for the 400th anniversary of Southwestern exploration is provided in this biography of Coronado. To supplement the running narrative, the author has added more than 50 pages of fine-print notes and chronology. Writes Mr. Day: "One can best understand the present and future development of the Southwest by comprehending its beginnings."

Science News Letter, November 23, 1940

MINERALOGY

5000 YEARS OF GEMS AND JEWELRY—Frances Rogers and Alice Beard—*Stokes,* 309 p., illus., $2.50. As the title suggests, this book for the general reader goes back to Egypt and Phoenicia and works forward entertainingly through medieval and renaissance jewelry history, and so to "the modern jeweler." A second part provides information about various stones.

Science News Letter, November 23, 1940

MINERALOGY

JEWELS AND GEMS—Lucile Saunders McDonald—*Crowell,* 288 p., illus., $2. A popular book on an intriguing subject, recounting many facts about gem stones and anecdotes of their history.

Science News Letter, November 23, 1940

CHEMISTRY—PHYSICS

HANDBOOK OF CHEMISTRY AND PHYSICS (24th ed.)—Charles D. Hodgman and Harry N. Holmes, eds.—*Chemical Rubber Pub. Co.,* 2564 p., $3.50. The new features in this latest edition of a well-known reference work include a revised table of the properties of commercial plastics, a table of induced radio activities and a table of the physical constants of industrial organic compounds. These should make it even more useful than it has been in the past.

Science News Letter, November 23, 1940

AERONAUTICS

PROCEDURE HANDBOOK FOR AIRCRAFT STRESS ANALYSIS—Nye, Hamilton and Eames—*Aviation Press,* 334 p., illus., $4.

Science News Letter, November 23, 1940

PHOTOGRAPHY

A BOOK OF ANIMALS—Bryan Holme—*Studio,* 95 p., illus., $2. A collection of animal pictures, mostly of domestic animals, many of them beautiful, and all full of charm and character.

Science News Letter, November 23, 1940

PHOTOGRAPHY—BIOLOGY

UNDER SEA WITH HELMET AND CAMERA—A. Felix du Pont—*Dodd, Mead,* 87 p., illus., $2.50. Interesting experiences with undersea photography (including several how-to-do-it chapters); also, equally interesting experiences ashore in the Bahamas.

Science News Letter, November 23, 1940

RADIO

RADIO AND THE PRINTED PAGE—Paul F. Lazarsfeld—*Duell, Sloan and Pearce,* 354 p., $4. Why and how people listen to the radio, and whether listening is more effective than reading the newspapers is explored in this extensive study of the Princeton radio project sponsored by the Rockefeller Foundation. Here are a lot of facts for listeners, readers, radio producers and editors to chew upon.

Science News Letter, November 23, 1940

BOTANY

TREE PUZZLE FOR HIGH SCHOOL STUDENTS (4th ed., rev.)—J. M. Hitchings—*Pub. by author, Senior High School, Davenport, Iowa,* 26 p., 15c.; 10 or more 10c. *Obtainable direct from author only.* A key to tree species in a Midwestern area. The search for the right name is made more appetizing to beginning students by calling it a "puzzle" instead of a "key."

Science News Letter, November 23, 1940

GENERAL SCIENCE—BIOGRAPHY

LITTLE BITS ABOUT BIG MEN—B. C. Forbes—*Forbes,* 223 p., $2.50.

Science News Letter, November 23, 1940

ELECTRICAL ENGINEERING

TORCH OF CIVILIZATION, The Story of Man's Conquest of Darkness—Matthew Luckiesh—*Putnam's.,* 269 p., illus., $3. A fascinating account of what lighting has done for man, from its use in the ritualism and symbolism of primitive man to modern illumination of home, office and highway, and in decoration. As director of the General Electric Company's Lighting Research Laboratory, Dr. Luckiesh is able to write with unusual authority.

Science News Letter, November 23, 1940

MEDICINE

TABER'S CYCLOPEDIC MEDICAL DICTIONARY—Clarence Wilbur Taber and Associates—*Davis,* 1470 p., illus., indexed $3; unindexed $2.50. This seems to be a combination of a medical dictionary and a digest of nursing procedures and as such may prove to be a useful reference book for nurses.

Science News Letter, November 23, 1940

ANTHROPOLOGY

YOKUTS AND WESTERN MONO MYTHS—A. H. Gayton and Stanley S. Newman—*Univ. of Calif. Press,* 109 p., $1.25 (Anthropological Records, Vol. 5, No. 1).

Science News Letter, November 23, 1940